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KATHERINE BINGHAM
THE PASTURE ROAD
FIRST PRIZE, CLASS B

PHOTO ERA

The American Journal of Photography

VOL. XIV JANUARY, 1905 NUMBER 1

H. W. SCHONEWOLF
A MEMORY OF THE SEASHORE
NINTH PRIZE, CLASS B

OUR THIRD ANNUAL PHOTOGRAPHIC CONTEST

THOMAS HARRISON CUMMINGS

With the opening of the New Year the first task at hand is to record the results of our Third Annual Photographic Contest. With a list of entries surpassing all former records, we have experienced great satisfaction in examining and assorting these pictures with our editorial colleagues. A lapse of taste here and there, or a slight mistake in selection, or the absence of vigor of touch in a few of the pictures submitted has in no way dampened our enthusiasm for this exhibit, but has created in us a finer appreciation for the better work and a more penetrating and effective insight concerning the resources of our craft. Judged as a whole the exhibit leaves an impression of an all-round improvement. There is a general advance in the appreciation of tonal values among the contributors and an almost total elimination of harsh and strong contrasts of blacks and whites, in these pictures. Moreover, it is refreshing and encouraging to find everywhere manifest a strong love of nature, and a disposition to be keenly observant

KATHERINE BINGHAM
MISCHIEF
FIFTH PRIZE, CLASS A

of her various aspects under varying conditions, all of which accounts for the healthy, sane, and strongly original work found in this collection of pictures. The list of awards follows:—

GRAND PRIZE

AWARD

C. F. Clarke, 10 pictures.

HONORABLE MENTION

1. Theodore Eitel, 10 pictures.
2. Katherine Bingham, 15 pictures.
3. W. H. Porterfield, 6 pictures.
4. Wm. H. Zerbe, Jr., 17 pictures.
5. Arthur L. Barrows, 12 pictures.

CLASS A

AWARDS

1. Theodore Eitel, The Newspaper.
2. Mrs. Helen P. Gatch, Lear.
3. Mrs. W. W. Pearce, "Girls Ain't Much."
4. Mrs. Helen P. Gatch, After the Storm.
5. Katherine Bingham, Mischief.
6. Mary G. Huntsman, Blossoms.
7. Albert H. Moberg, "What Will Mamma Say?"
8. C. F. Clarke, Fun for the Boy.
9. Morris Wasserman, Preserves.
10. W. H. Zerbe, Jr., Tillers of the Soil.

HONORABLE MENTION

Arthur L. Barrows, Toil.
Katherine Bingham, La Bella, Laudes Domini, Portrait Group, So Sleepy.
Mrs. C. J. Campbell, Wild Animals I Have Known.
C. F. Clarke, The Shoemaker.
H. B. Conyers, The Alley Boss.
G. H. Ewart, An American Monarch, Bison.
Dr. C. H. Gardner, Acknowledgment, Blowing Bubbles.
Mrs. Helen P. Gatch, As the Birds Fly.
Clarissa Hovey, Fairy Tales, Vivian.
Mary G. Huntsman, Dorothy.
Thomas J. Jones, Waiting.
H. W. Kimball, The Sheep Feeding.
Fred T. Loomis, Nearing Home.
Lawrence Macomber, Sheep Study.
Albert H. Moberg, "Never Mind, Mamma Won't Scold."
W. Schrempf, Beacon Street, Boston.
Mrs. J. C. Sheridan, The End of a Day of Toil.
Morris E. Thomas, Character Study.
Wm. L. Van Norte, Turning the Shoe.
Emma L. Williams, Mother and Child.
W. H. Zerbe, Jr., The Seamstress, The Study Hour.

MRS. HELEN P. GATCH
LEAR
SECOND PRIZE, CLASS A

CLASS B

AWARDS

1. Katherine Bingham, The Pasture Road.
2. C. F. Clarke, Dreary Road.
3. W. H. Porterfield, A Peaceful Valley.
4. T. Edward Schiedt, Evening.
5. Lawrence Macomber, The Glade.
6. Theodore Eitel, The Harvest Field.
7. W. H. Zerbe, Jr., Returning to the Fold.
8. W. H. Zerbe, Jr., Brown October.
9. H. W. Schonewolf, A Memory of the Seashore.
10. Theodore Eitel, Landscape.

HONORABLE MENTION

Arthur L. Barrows, Autumn, Autumn Fruit, The Dunes, The Home of Long Ago.
Katherine Bingham, Lights at Eventide.
W. de F. Brown, Solitude, Surf.
C. F. Clarke, The Valley, Winter.
W. F. Daniell, Jr., Birches, Sugar Maples in January.
Theodore Eitel, Quietude, The Beeches.
John H. Fassitt, The Lake.
Mrs. Helen P. Gatch, Autumn.
Reina A. Lawrence, Poets' Narcissus.
James V. Porter, Autumn Morning in the Woods, The Bend in the Creek.
W. H. Porterfield, A Toiler of the Sea, Flower Study, The Song, Towards Evening along the Niagara.
H. W. Schonewolf, There Is a Pleasure in the Pathless Woods, Under the Trees.
W. Schrempf, At Sunrise in Harbor, Shore at Newport.
Mrs. J. C. Sheridan, Lilacs Lavender.
Mrs. E. E. Trumbull, Sand Dunes in Winter.

SIXTH PRIZE
CLASS B

THEODORE EITEL — THE HARVEST FIELD

The award of the Grand Prize was made to Mr. C. F. Clarke of Springfield, Mass., for a collection of ten pictures, of which seven were landscapes and three genre. Mr. Clarke's landscapes show great artistic feeling in choice and lighting, and great technical skill in execution. The composition is always admirably simple and well-balanced. The lighting is always effective, and the atmospheric effects desired are obtained in the negative, so that the earth and sky are in full harmony. His genre studies show the same excellent grasp of composition. His photographs are pictures because they contain a single interest, properly placed, and with accessories properly subordinated. Two of these pictures are reproduced in this number, one appeared in December, having been reproduced before its entry in this competition, and others will appear in future numbers.

The other collections which were considered by the judges sufficiently strong for consideration for the Grand Prize are named above in their order of merit. None of them showed the same uniformity of quality displayed by the work of Mr. Clarke. All of them contained work of very high quality, and other pictures of much lower merit. In most cases, if the number of pictures submitted had been reduced to one half, the average of the collection would have been raised very much, and the chance of winning higher rank correspondingly increased. The ability to criticize one's own pictures fairly and impartially is a necessary part of the artist's equipment.

Let us now consider the pictures which obtained the awards for individual merit. Mr. Eitel's "The Newspaper" is a very happy piece of posing, well thought out and consistently executed. The accessories are all in keeping with the Teutonic individual who plays the title rôle, and the picture might be taken in any of a thousand German inns. The picture was taken with a B. & L. Zeiss lens of 19¼ inches focal length, working at f. 11, at 9 A.M., on a Seed 26x plate, developed with pyro-soda, and printed on Willis & Clements' KK Platinum paper.

Mrs. Gatch's picture, despite its somewhat unnecessary title, is a magnificently handled piece of portrait work. The pose, expression, and lighting are all extremely good, and the only alteration which we can suggest would be the trimming of some black space away at the left

THEODORE EITEL FIRST PRIZE, CLASS A THE NEWSPAPER

and top. The picture was taken with a wide-open Darlot lens, at 10 A.M., on a Cramer Crown plate. The developer was pyro, and the print was made on American Platinum.

Mrs. Pearce's "Girls Ain't Much," which was accepted at the New York Salon, is a charming study of child character, and another fine piece of portrait work. Some minor defects do not detract from the general success of the picture. It was made with an R. R. lens, open stop, in good light at 11 A.M., with 1-5 second exposure. Plate, Cramer Crown; developer, pyro; W. & C. Sepia Platinum paper.

"After the Storm" is again by Mrs. Gatch, but very different in character from her other prize picture. Although the pose seems a trifle unreal, the accurate rendering of values and the admirable placing of the figure render the picture well worthy of its place. The exposure was made in sunlight at 9 A.M., with a Darlot lens working at f. 25. The Cramer Isochromatic plate was developed with pyro, and the print is on American Platinum, mercury developed.

Miss Bingham's "Mischief" is another pleasing child study, well handled, and technically as well as artistically good. It was taken with the front combination of a Plastigmat lens of 19 inches focus, with stop f. 4 (?) and $\frac{1}{4}$ second exposure in bright light. Plate, Cramer Crown; developer, pyro; Willis & Clements' Platinum paper.

Miss Huntsman's "Blossoms" is a charming bit of portraiture made under difficult conditions, and exceedingly well done. It was taken with a B. &. L. lens of 10 inches focus, stop 4,

C. F. CLARKE
DREARY ROAD
SECOND PRIZE, CLASS B

MRS. W. W. PEARCE
GIRLS AIN'T MUCH
THIRD PRIZE, CLASS A

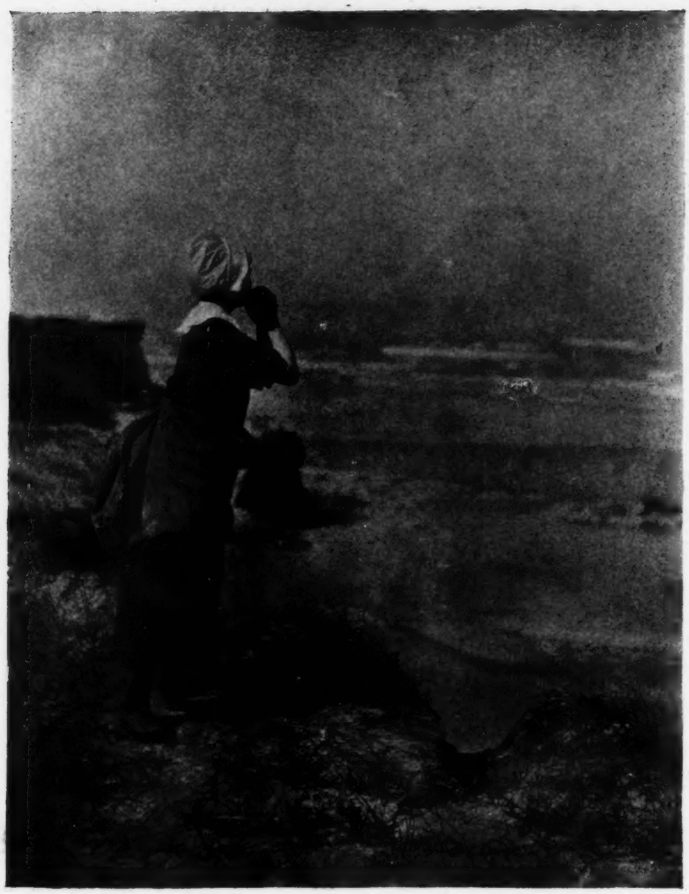
exposure 5 seconds with diffused light at 4 P.M. Plate, Seed 26x; edinol developer; platinum print.

Mr. Moberg's child study is one of those story-telling pictures which always appeal to the popular taste, and is at the same time a well composed genre study. The attitude of the model is instinctive and natural. The lens was by the American Optical Co., stop f. 8, focal length 13½ inches. The exposure was by flashlight on an Orthonon plate; developer, ortol; and paper, American Platinum.

Mr. Clarke's "Fun for the Boy" depicts truthfully the invincible tendency of a boy with a snow-shovel to get to work wherever he finds snow, regardless of the utility of his efforts. The distance is well handled, and the prim, stiff row of New England cottages becomes almost picturesque by the treatment. The print is an enlargement from a No. 3 Kodak negative, printed on carbon.

Mr. Wasserman depicts another phase of childish activity, the process of imaginary cooking, and does it in a very pleasing fashion. The picture was made with a Goerz lens, of 11 inches focus, instantaneous exposure at f. 8 on a cloudy day at 3 P.M. The Orthonon plate was developed with pyro and printed on Eastman Sepia.

Mr. Zerbe's "Tiller of the Soil" is another print shown at the New York Salon, and possesses undoubted merit in broad handling and good composition, coupled with some faults,



MRS. HELEN P. GATCH
AFTER THE STORM
FOURTH PRIZE, CLASS A

one of which is the confusion of the rear horse. The picture was taken with a Goerz lens of 8 inches focus at f. 16, in 1-50 second at 3 P.M., in good light. The Cramer Isochromatic plate was developed with pyro, and the print is a bromide enlargement made through bolting cloth.

The first prize picture in Class B, Miss Bingham's "The Pasture Road," is an excellent example of simple landscape composition. The trees are properly placed, the perspective of the road is excellent, and the necessary element of slight mystery is added by speculation as to where the road, disappearing behind the trees, leads. The picture is a platinum print made with a Plastigmat lens on a pyro-developed Cramer Instantaneous Isochromatic plate. The exposure was 1 second, with stop 16 at 5 P.M., on a rainy day.

Mr. Clarke's "Dreary Road" is a beautiful gray carbon print to which the reproduction does not do justice. The quality of the snow and the wonderful softness and depth of the shadows cannot be found in the cut, but even this is a beautiful snow scene. The picture was made at 3 P.M., in bright light. The exposure was 2 seconds with a dark color screen, using a Goerz f. 6.8 lens of 9½ inches focus at full opening. The plate was developed with ortol and printed on gray carbon.

"A Peaceful Valley," by W. H. Porterfield, was hung at the New York Salon. It is an effective example of simplicity and massing. The atmospheric values are beautifully defined without injury to the truth of the foreground tones, and the picture is an example of the best

W. H. PORTERFIELD
A PEACEFUL VALLEY
THIRD PRIZE, CLASS B

C. F. CLARKE
FUN FOR THE BOY
EIGHTH PRIZE, CLASS A

in landscape photography. It was taken with a Gundlach lens of 6½ inches focal length, working at f. 32. The exposure was one second at 10 A.M., on a bright day. The Cramer Isochromatic plate was developed with metol, and the print from an enlarged negative was made on Cyko paper.

Mr. Schiedt's "Evening" is a pleasant piece of marine work. It was taken with a Euryscope lens of 6½ inches focus on a Stanley plate and developed with edinol. The exposure was 1-30 second at f. 15 at 4.30 P.M., in medium light. The print is green carbon from an enlarged negative.

"The Glade" is a very pleasing bit of photography in a woodland interior, in the familiar style known in England as "beech and bracken." Again in this picture we have a very simple composition, which is all the more effective for this reason. It was taken with half of an R. R. lens of 12 inches focus. The stop was 4 (?), and the exposure was made on a dark afternoon. The Kodoid plate was developed with pyro-metol and printed on Royal Bromide.

Mr. Eitel's "Harvest Field" is one of the few successful pictures of this kind which we have seen. The Zeiss lens of 19 inches focus was given 1 second exposure at f. 11 at 3 P.M. The Seed 26x plate was developed with pyro and printed on W. & C. KK Platinum paper.

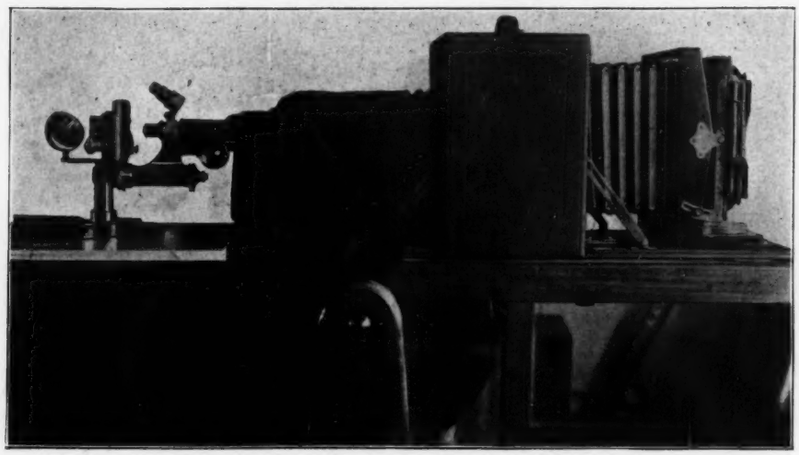
Mr. Zerbe's "Returning to the Fold" was taken with a Goerz lens of 8 inches focus at f. 16, with 1-25 second exposure in good light at 5 P.M. The Cramer Isochromatic plate was developed with pyro and printed in carbon.

T. EDWARD SCHIEDT
EVENING
FOURTH PRIZE, CLASS B

"Brown October" by Mr. Zerbe was taken with the rear half of a Goerz lens, making the focal length 16 inches. The exposure at f. 16 was 2 seconds in good light at 3 P.M., with a ray screen. The Cramer Isochromatic plate was developed with pyro and printed on brown carbon.

Mr. Schonewolf's marine was taken with an R. R. lens of 8½ inches focus at f. 8 in 1-25 second at 6.45 A.M., on a cloudy day. The backed Cramer Instantaneous Isochromatic plate was developed with ortol and printed on platinum.

Mr. Eitel's "Landscape" was taken with a Zeiss lens of 19 inches focus in 1 second at f. 11 at 4 P.M. The Seed 26x plate was developed with pyro and printed on KK Platinum paper.



F. A. WAUGH CAMERA AND MICROSCOPE

MICROPHOTOGRAPHY WITHOUT SPECIAL APPARATUS

F. A. WAUGH

Microphotography is usually looked upon as one of the most difficult of all photographic specialties. Commonly the man who expects to try it spends $300 for special apparatus, then spends a year in learning how to run the machinery, and then goes back to pen-and-ink drawings made through the old camera lucida. Now I don't know how many other men have hit on the same scheme which I have, but as far as I am concerned it is a first-hand discovery. I make my microphotographs with an ordinary camera. Any camera which has a ground glass for focusing will do. I have used the common cycle forms with complete success, though naturally my Graphic Special is more easily manipulated.

The whole undertaking is simple enough. The object is mounted and placed in a compound microscope in the usual way. The microscope tube is then brought down till its axis is horizontal. The substage reflector is placed so as to throw a strong light through the section. The camera is then put in place directly back of the microscope, the camera lens being within half an inch or so of the microscope eyepiece. The axis of the camera lens should coincide as nearly as possible with the axis of the lens system in the microscope. The eyepiece of the microscope and the lens of the camera are not essential. An image can be secured without either one or both of these. Better definition and more satisfactory results are usually secured, however, with both these lenses in place.

The junction of the camera with the microscope should be covered with a black cloth, though this is not absolutely necessary.

Now we are ready to locate and focus the image on the ground glass. To do this, three different matters have to be attended to: (1) The substage reflector must be adjusted until it gives a strong and even illumination all over the field; (2) The microscope must be focused; (3) The camera must be focused. To some extent the last two operations are combined at times, since when the object is approximately in focus it may be brought up sharply by focusing either instrument. When the work is well in hand, this focusing may be done with great exactness. With the lens combinations which I most frequently use, I have found that one can discern with the naked eye on the ground glass a difference in microscope focus of less than one one-thousandth of a millimetre.

As to the subjects which may be photographed in this way, there is nothing to be said, except that anything which can be seen in the microscope can be photographed on the plate, and something more.

F. A. WAUGH
SECTION OF PLUM GRAFT

The quality of the work is just as good as that secured with expensive machinery. In fact, I have made better microphotographs with the outfit described than I have ever seen made with any other apparatus whatever; but that may be, of course, because my observation of other men's microphotography has been limited in range. The accompanying sample is from a rather indifferent section of wood tissue, unstained, and with no special preparation. The magnification shown is about 1000 diameters. It may be noted in the engraving that the pitted cell walls of the ducts are plainly visible, and that is a pretty good test of microscopic work.

THE MAKING OF A SKEPTIC

The photograph can never do full justice to the look
That father's face had on the day he got his picture took.
When father got his picture took he had a winnin' smile,
Jes' like an angel whispered to him every little while;
He wore a stand-up collar and a button-hole bouquet,
An' looked the fam'ly over in a kind an' patient way,
Like nothin' ever riled him. None who saw him would have said
He'd have the heart to take a strap to me out in the shed.

But when we got back home it wasn't any time at all
Till father smoked his pipe an' left his coat out in the hall,
An' looked as fierce as anything, an' started in to scold
Because the steak was tough an' everything was gettin' cold.
I tell you it was somethin' most discouragin' an' strange
To see his disposition undergo so great a change.
I wish we could arrange it every day, by hook or crook,
To have him take a trip to town an' get his picture took.

So when I see the portrait of a statesman, lookin' grave,
Or of some military man, a-standin' up so brave,
Or of some actress lady, with a sweet an' tender smile,
Or of some financeer, with an expression free from guile,
Or of some scientific man, a-lookin' calmly wise,
Or of a violinist, with his hair down in his eyes,
Or of some literary chap a-bendin' o'er a book,
I think about the day that father got his picture took.

—*Washington Star.*

SIXTH PRIZE
CLASS A

MARY G. HUNTSMAN BLOSSOMS

EXPOSURE AND LIGHT MEASUREMENT

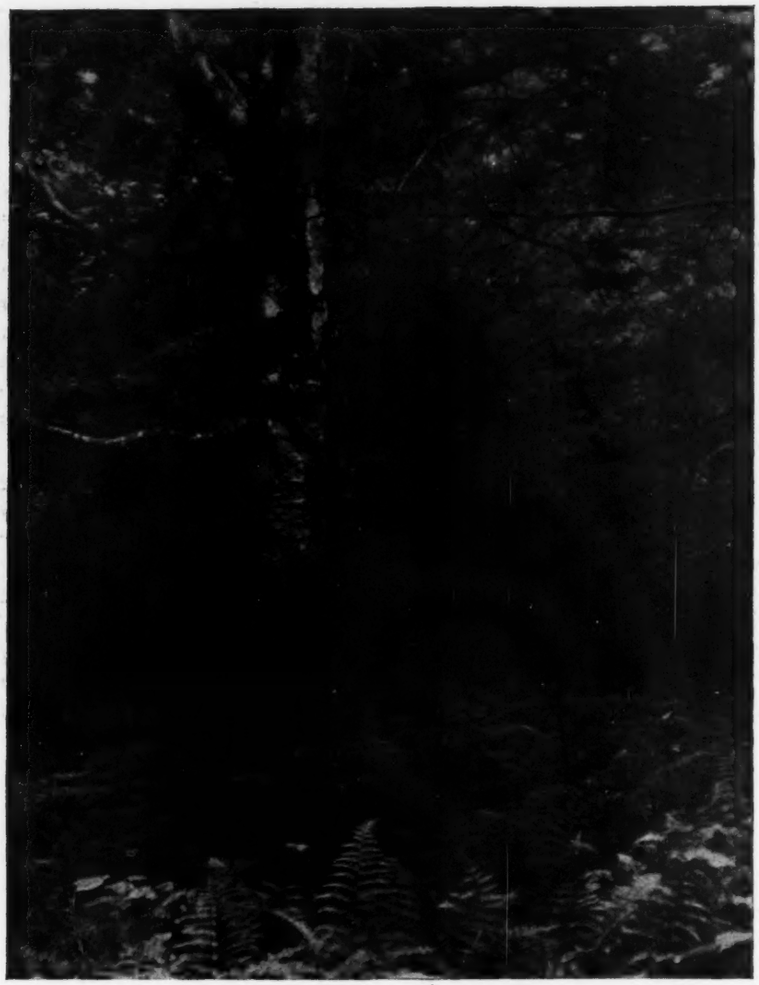
WILFRED A. FRENCH, A. M.

One of the principal requirements in the practice of photography is the ability to correctly expose the sensitive plate or film. To the experienced professional photographer, whose daily practice enables him to successfully gauge the increasing and decreasing intensity of light as well as its variable character, this feature of the science offers no serious problem. The individual who makes a specialty of portraits understands that the time of day, the quality and strength of light, the complexion of the sitter and color of costume, the speed of his lens, the size of diaphragm and the degree of sensitiveness of his plate must be intelligently considered — separately and collectively — before he determines the length of exposure. This should be done after only a few moments' thought, for to arrive at a conclusion only after a lengthy and strenuous mental process, might endanger the patron's confidence in the artist's ability; besides, much valuable time is wasted. The person who photographs principally interiors will compute the number of minutes necessary to a successful exposure by a process of reasoning similar to that of the portrait photographer. So do all those who make a specialty of any branch or branches of photography.

If, however, a photographer makes essays in a sphere of his profession where he lacks the necessary experience, he will find himself in a dilemma, unless aided by a reliable guide, be it in the form of a brother-photographer, printed suggestions, or an exposure-meter. If left entirely to his own resources, he will venture several plates of the same subject, varying the length of exposure, with a possible change in the size of diaphragm, according to the conditions confronting him. Such a proceeding is manifestly attended by waste of time and materials, regardless of the threatened loss of favorable opportunity. Let our readers imagine the case of photographing a series of interiors, requiring an average exposure of sixty minutes,

ALBERT H. MOBERG
WHAT WILL MAMMA SAY?
SEVENTH PRIZE, CLASS A

and the time allotted to the entire work only a few hours. Or let the subject be a number of oil-paintings in a feebly-lighted apartment, and the operator not familiar with this class of work. In either case the efforts are largely experimental, and success problematical. Then please imagine the result with an efficient and well-equipped photographer facing the situation. He will gaze about him a few moments, appreciate the existing conditions, and what he has to work with, then proceed with the task in hand, calmly, intelligently and prudently. To him success, barring accidents, is always in sight. An intelligent professional, undertaking such a task for the first time, can exercise better judgment than the novice, who is likely to be utterly helpless facing an unfamiliar phase of photography. In the case of a dark interior, the professional will calculate the length of exposure on the basis of minutes; the amateur in seconds. The difference in the results of the two laborers in a new field is obvious. This is not intended as a reflection on the intelligence of the amateur. Far from it. The illustration is designed merely to demonstrate that the professional of even average ability, by reason of his practical knowledge of light, of its actinic power, fickleness, and possibilities, is, in one respect, better equipped than the amateur. We except, as a matter of course, the numerous gifted amateurs — those of acknowledged technical mastery. Much might be said about the loss of time and materials, with reference to the photographer who never emerges from the experimental stage; who, instead of proceeding in an intelligent, rational manner, works blindly, as it were, by exposing a number of plates in the fond hope of saving at least one. Such a man does not progress and cannot be considered a reliable workman, even if he produces occasionally an excellent, well-timed negative. A first-rate negative should be the rule and not the exception. To materially assist in determining the correct length of exposure, the exposure-meter — known also as actinometer,



LAWRENCE MACOMBER
THE GLADE
FIFTH PRIZE, CLASS B

photometer or actinograph — was placed on the market, and no one can deny that it has performed its mission well. Although a really indispensable device, the exposure-meter has numerous shortcomings. One is that each pattern differs from the other in method of application; there is no universal standard. Another serious objection is the amount of time required to ascertain the necessary duration of exposure. There is also the well-known difficulty in procuring the special tinting-paper called for by each different exposure-meter. We find no uniform standard of tint or sensitiveness, and it is not always easy to obtain it in perfect condition. Professionals do not resort to the use of the actinometer except in the bichromate printing processes, where it is deemed a necessity. In the absence of an exposure-meter many workers, of limited experience in timing plates, have recourse to note-books recording practical details of plates previously exposed. But all these efforts and devices to ascertain one little item of information, viz., how long to expose a plate, appear inadequate and seem out of harmony with this age of invention and scientific research. There is room for a simple, accurate and uniform system of measuring the intensity of light-values, by which almost any one can quickly and easily determine the correct length of exposure.

TENTH PRIZE
CLASS A

W. H. ZERBE, JR. TILLERS OF THE SOIL

This brings up the subject of a method of measuring the intensity of light by F. M. Steadman, upon which topic that gentleman discoursed so interestingly at the National Photographers' Association at St. Louis last October. His desire is to establish a simple means of measuring the strength of light, or rather, we should say, the light reflected by the sitter or any object to be photographed. He states, that while there are standard scales for measuring dimensions, weight, volume, degrees of temperature, humidity, etc., there is none for measuring light. As he expresses it, "We want to make a scale by which we can measure the intensity of light and express it in actual time — in simple units. Then we can study and practice photography successfully." By taking one second as a definite unit, he suggests the following scale, — $\frac{1}{2}$, 1, 2, 4, 8, 16, 32, considering it a very true scale for light-intensities, and with it one can determine exactly the intensity of light.

There are several points of weakness in the plan proposed by Mr. Steadman which were mentioned editorially in the December issue of the PHOTO ERA; but it is worthy of note that, agreeably to the wish of that gentleman, President Reeves appointed a committee, of which Mr. S. L. Stein was a member, to investigate the merits of Mr. Steadman's method and make a report. The committee reported favorably, acknowledging the value to the practice of photography of the method as expounded by Mr. Steadman before the convention, and recommended its adoption, together with suggestions as to the selection of standard papers, for the measurement of light-intensity, and scale of values, — $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1, 2, 4, 8, 16, 32 seconds or minutes. As to the application of the Steadman method to dry-plates, the committee recommended that the National Photographers' Association request each and all of the plate and film manufacturers of the United States to investigate the method, with a view toward establishing a uniform system, should the method be found satisfactory. This report was accepted by a unanimous vote of the convention.

THE PRINCIPLES OF PHOTOGRAPHY BRIEFLY STATED

PHIL M. RILEY

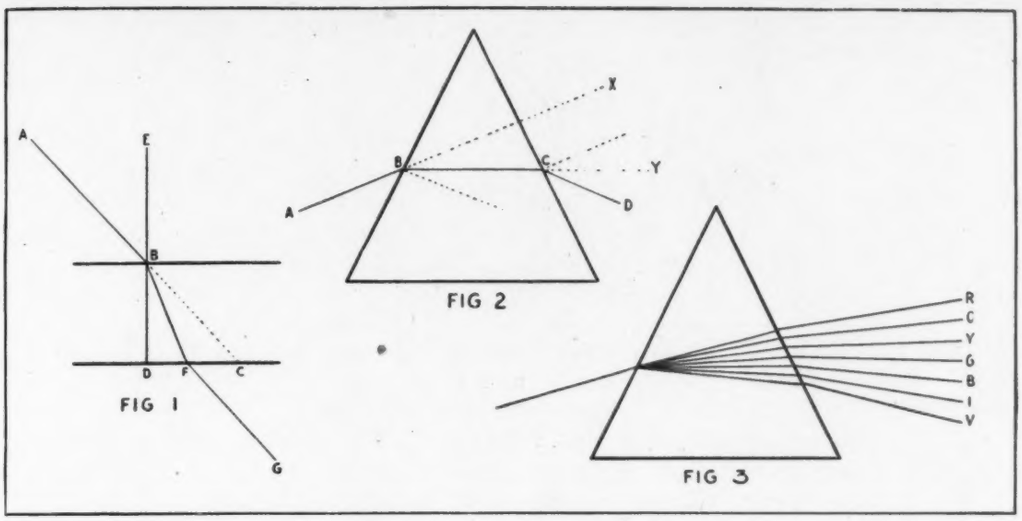
First Paper — Light

1. *Theory of Light.* — There is supposed to be an elastic medium, termed "ether," constituting a kind of universal atmosphere, diffused through and pervading all space. It is so subtile that it glides among the molecules of bodies as the air does among the branches of the trees; it fills the pores of all substances, penetrates all transparent or translucent matter, and eludes all chemical tests. Sources of light, such as the sun, set this ether in motion, sending off waves or vibrations in every direction. The surrounding ether catches up these vibrations and carries them along like waves in water until they reach the eye of the observer, and the sensation produced is light. Light has several properties peculiar to itself, four of which are of especial interest in this lesson, as the possibility of photography is dependent upon them; they are refraction, dispersion, reflection, and actinism.

2. *Refraction.*— Light travels in straight lines as long as it continues to travel in a medium of uniform density. When light passes from one medium into another of different density, as from air into glass or from glass into air, the rays are bent or refracted from their original direction unless they fall at right angles to the surface, when they proceed straight on. If light passes from a lighter to a denser medium, it is bent toward a line perpendicular to the dividing surface; if it passes from a denser to a lighter medium, it is bent away from the perpendicular. The amount of the bending or refraction depends upon the density of the medium; it is more with water than with air, more with glass than with water, and more with some kinds of glass than with others. Figure 1 shows the ray of light, AB, falling obliquely on the surface of a thick glass at B; the ray is bent toward the perpendicular, emerging at F, where it is bent again on coming into the air, this time away from the perpendicular, and travels in a line parallel to that of its entering the glass. The ray of light, EBD, passing through the air at right angles to the surface of the glass at B, proceeds straight through it to D and onward, as before indicated. If a ray of light is refracted through a glass prism, the inclination of the sides causes the ray to be bent twice in the same direction. In Figure 2 the ray AB enters a prism at B; the ray is bent toward a perpendicular to that side of the prism, shown by the short dotted line, and instead of proceeding straight to X, passes to C. At this point it emerges into the air and is again bent, this time away from a perpendicular to this second side, shown by the short dotted line, and instead of proceeding straight to Y, passes to D. Notice that the ray is bent toward the base of the prism; you will see later that this is an important feature in the construction of a lens.

3. *Dispersion.*—Refraction does more than the mere bending of the ray out of its straight course. It also disperses or decomposes it into seven colors called the "solar spectrum." By the use of a second similar prism these colors may be recomposed to produce white light. This proves that what we regard as white light is a combination of these seven colors which produce the sensation of white light by their simultaneous effect upon the eye. These colors, produced by refraction of light through a prism, always occur in the same order,—viz., red, orange, yellow, green, blue, indigo, and violet. Notice in Figure 3 that each color is refracted at a different angle, the violet ray is bent the most and the red ray the least. This is the result of the difference in the vibrations producing different colors. Color is analogous to pitch, violet corresponding to the high and red to the low sounds in music. Intensity of color, as of sound, depends on the amplitude of the vibrations. Light has already been spoken of as the result of vibratory action on the eye, and this statement can be expanded still further. White light is a combination of different wave lengths or rates of vibration. If the whole combination reaches the eye, the sensation is that of white light, but if rays of only one or two wave lengths reach it, the sensation is that of color.

4. *Reflection.*— No object has color of itself. Color is the result of the action an object

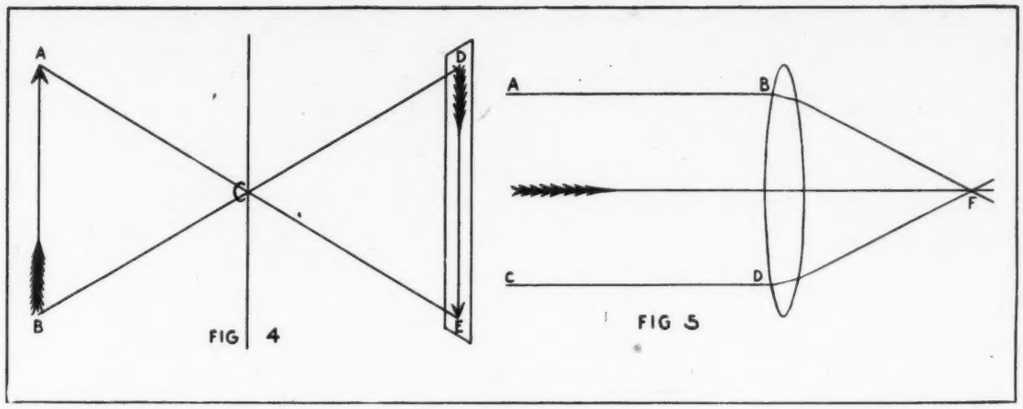


has upon the light falling on it. All objects have the power of absorbing certain light rays or wave lengths and reflecting others, and the effect of these reflected rays upon the eye produces the sensation of color. When an object absorbs the wave lengths producing all the colors except blue, but reflects those to the eye, it is called a blue object; when it absorbs all but green, it is called a green object. If it absorbs all the colors, it is black; if it reflects all the colors, it is white. The waves of light which come in contact with an object are broken up by the rough particles of its surface, and each particle reflects rays in all directions. The eye, receiving them from every point of an object, condenses them to corresponding points and rearranges them on the retina in the form of the object from which they were reflected, and we say we see the object. It is reflection which makes it possible for us to see. As is explained later, the lens acts on the same principle as the eye.

5. *Actinism.* — Light has the power of causing chemical action on certain substances, and this property is called "actinism." It is very well shown by the action of light on the compounds of silver, especially silver chloride and bromide. White silver bromide when exposed to light gradually darkens, losing part of its bromine and becoming partly changed to a less stable compound or to metallic silver. Upon this action depends the formation of the image on a plate or film. Silver bromide is not equally sensitive to all colors of the spectrum. Violet has a marked effect, while red has almost no effect whatever, and the other colors range between. This is the reason for using a red light in the dark room.

The Lens

6. *Needle-hole Images.* — Many years ago somebody discovered that when light was admitted to a darkened room through a small opening about the size of a needle hole, an inverted image in natural colors of the objects outside would be formed on a white card placed opposite the opening. Figure 4 shows clearly why the image is inverted. Light travels in straight lines as long as it continues to travel in a medium of uniform density. The arrow AB represents an object outside, such as a tree. By reflection rays of light are sent off in every direction in straight lines from A; a few of them pass through the needle hole at C and proceed in straight lines until they come in contact with the white card, and there form an inverted image at E. In the same manner rays from B travel to D, and likewise from every point between A and B, forming a complete inverted image, as shown by the inverted arrow DE. A needle-hole image is not very bright and sharply defined, nor can it be made so. If the needle hole is made larger, the image



becomes brighter, but its sharpness or clearness is greatly decreased. A group of needle holes will give more light, but a separate image is formed by the rays of light passing through each opening, and the result is a number of blurred images overlapping each other on the white card.

7. *Use of Refraction in the Lens.* — It is obvious that in order to make use of this principle, a large opening is needed, together with some means of bending all the rays of light passing through it to one focus, so that instead of forming several overlapping images, they would all be combined into one. It has been found that by making a piece of glass of a particular shape one could make the refracted rays of light pass through it in the desired way and accomplish this result. If this piece of glass is used instead of the needle hole in a darkened room, the resulting image formed is much sharper and brighter. This piece of glass is called a "lens."

8. *The Lens.* — A lens may be considered as a pair of prisms placed base to base, of one piece of glass, and with curved instead of flat surfaces. Rays of light striking perpendicularly in the center of the lens will pass straight through it, as shown by the arrow in Figure 5. These are called "axial rays." All other rays, such as AB and CD, are refracted on entering and leaving the lens; they are bent toward the thick part of the lens and cross the axial rays at F, the focus of the lens, — the point where an image of the object from which the rays were reflected is formed. The distance from the center of the lens to the point of focus is called the "focal length." It will be seen, therefore, that the mission of the lens, like that of the eye, is to receive the waves of light from every point of the object, and to bring them to a point where a distinct image of the object from which they were reflected will be formed.

The Camera

9. *The Camera Obscura.* — In order to make use of the lens and the darkened room as a means of portraying the scenes of nature, the camera obscura, or sketching camera, was invented. This was simply a portable, darkened room, often a tent of black cloth, within which was a small table having a lens inserted in one side opposite a small opening in the room, and a mirror placed under the center of it at such an angle as to reflect the image upward. Set into the top of the table was a piece of ground glass to receive the image, which was copied with a pencil as it appeared through a thin sheet of white paper laid on the ground glass.

10. *The Modern Camera.* — From this first invention has gradually been developed that complicated thing of lens, wood, leather, brass, lacquer, and varnish, which the beginner calls a "camera." Manufacturers have vied with each other and added improvement after improvement to their cameras, until now many of them have been brought to a degree of perfection which it seems almost impossible to excel. The various fittings and appliances have been added simply to increase the beauty and compactness of the camera, and to make it more readily adaptable to the varying conditions under which it may be used, and the many different classes

of work which the photographer may wish to attempt. The beginner should not regard his camera as anything complicated, for, with all its fittings, it is simply a light-tight box with a lens fitted into a small opening at one end and an arrangement at the other by which the sensitive plate or film may be held at the desired distance from the lens. Pictures of simple, ordinary scenes, just as good as can be made with the most complicated and ornamental of cameras, have been produced with a rough packing box, made light-tight, and provided with a lens at one end and some means of holding the sensitive plate in position at the other. This fact is mentioned merely to show that the essential requirements are very few, while the helps, comforts, and conveniences which camera makers have devised are many.

The Sensitive Surface

11. *Action of Light on Silver Bromide.*—After the camera obscura had been in use many years, there was a very natural desire to discover some means by which the unsatisfactory and laborious method of tracing out the image with a pencil could be bettered. Scientists began to study the action of light on different substances, and the final result was the discovery of a light-sensitive surface from which have been evolved, by successive improvements, the dry plates and films which are in general use at the present time. On this sensitive surface the image projected by the lens is received, and after the light has done its work, the image is made visible by chemical means. Scientists found in their experiments that the action of light was quite different on different substances. With one it had a tendency to bleach, while with another it darkened or discolored the substance. The whole principle of photography is dependent upon the action of light on certain salts, the most sensitive of which is silver bromide. Bromine is a gas which has a great affinity for some other substances, and therefore a tendency to combine or react with them or their compounds. When it combines with silver, silver bromide is formed. These elements, which are themselves insensitive to light, form a compound which is very sensitive to it. Silver bromide absorbs moisture from the air, and if it is exposed to light, part of its bromine reacts with the water thus absorbed, and the salt gradually darkens, becoming partly reduced to metallic silver. Darkening will take place more rapidly if there is a substance present with the silver bromide which combines or reacts with the bromine more readily than water, thus reducing the salt to metallic silver faster. These substances are called sensitizers. There are several of them, some acting to a greater extent than others, so that it is possible by varying the nature and quantity of the substance to regulate the rapidity and extent of the darkening.

[The author here states as a fact what can only be regarded as a disputed theory, but this is perhaps the simplest way of explaining the observed facts, and is a good working theory.—Ed.]

12. *Plates and Films.*—Since silver bromide can be made so extremely sensitive to light by the use of substances known as sensitizers, it has come to be considered the best medium for making plates and films. For this purpose it is combined with gelatine and a thin coating is spread on a sheet of glass or celluloid for support. Where celluloid or some other flexible material is used to support the emulsion, it is called a "film," because of its extreme thinness; if glass is used, it is called a "plate." Other chemicals are used in making a sensitive emulsion, but they do not play important parts, and need not be considered here. The gelatine is used to hold in suspension the finely divided atoms of silver bromide in an evenly distributed state, and it is also the chief sensitizer in ordinary plates and films. Many sensitizers are more powerful than gelatine, but they cannot be used in plate and film emulsions, because they would reduce and blacken the silver bromide long before the exposure was made. It can be readily seen that such plates and films could not be kept any length of time before use.

13. *The Action of Light during Exposure.*—It should now be perfectly clear that a plate is covered with a thin emulsion of gelatine carrying in it silver bromide, and when an exposure is made by opening the shutter of the camera for even the fraction of a second, it is sufficient to produce an effect upon the sensitive surface and form an image. Every part of the picture

SEVENTH PRIZE CLASS B

W. H. ZERBE, JR. RETURNING TO THE FOLD

before the camera reflects light, bright objects more and dark objects less; this light passes through the lens and forms an image on the plate, reproducing all the varying intensities of light and shade seen in the picture itself. These different intensities of light instantly begin to work a change in the composition of the silver bromide in proportion to the brightness of the light on this or that part of the image, and the length of the exposure. This change is caused entirely by light action; for, as a result of exposure, the silver bromide is subjected to the action of a weak sensitizer (gelatine), and the decomposition or reduction to metallic silver is very slightly commenced. The partial reduction to metallic silver, which the action of the light just barely starts, is not uniform on all portions of the plate, but is in proportion to the brightness of the light reflected through the lens by the different parts of the picture photographed. Parts that are in deep shadow reflect very little light, and, as a result, the portions of the plate corresponding to these parts of the view are affected very little, if at all, and remain unaltered silver bromide. Parts of the view which reflect bright light cause a slight reduction of the silver bromide on corresponding portions of the plate. It has already been stated in this lesson that silver bromide is more sensitive to some colors than to others, regardless of their brightness, and this fact renders the light action of a few colors slightly out of exact proportion to their intensity. This, however, need not concern the worker, unless he wishes at some later time to learn something of orthochromatic photography.

Development

14. *The Nature and Action of a Developer.* — If a plate is examined after exposure, no change will be seen in it, but the application of certain chemicals will bring out an image of the view photographed. This proves that a change caused by light action has taken place,

TENTH PRIZE
CLASS B

THEODORE EITEL — LANDSCAPE

since an unexposed plate will not produce such an image. It will thus be seen that an exposed plate needs to be further sensitized or developed to make the latent image visible. A developer is simply a sensitizer which acts after exposure, but cannot be compounded in the plate emulsion because it is so powerful. This sensitizer continues the reduction of the silver bromide to metallic silver, which was started by the weak sensitizer (gelatine), in proportion to the amount of the light action. Every day one sees actions which have a tendency to continue when once started. For instance, iron is caused to rust by the action of the moisture in the air, but if a quantity of water is placed on it, the rusting proceeds much more rapidly. Now the acceleration of the change in silver bromide (resulting from exposure to light in the presence of a weak sensitizer and development by the action of a powerful sensitizer) is very similar to that in the rusting of iron. The chemical action produced by development is the same as that produced by exposure, only it proceeds much more rapidly and to an extent so much greater that it is visible to the eye. It is evident that exposure has affected those parts of the plate subjected to the action of bright light, while the parts which received no bright light remain unchanged. The silver bromide that has not been affected by light is sufficiently stable to resist the reducing action of the developer when it is applied, while that which has been so affected, and consequently lost part of its bromine, readily gives up the rest and becomes reduced to opaque metallic silver, forming the negative image. As the image gradually appears on the exposed plate, after the developer has been applied, it seems to be composed of a substance with varying degrees of blackness, according to the varying intensities of light at different portions of the view photographed. The quantity of reduced silver on the various parts of the developed plate is in exact proportion to the intensity and activity of the light that reached them. Where the view showed strong light, the plate is covered with a black deposit; medium light is shown by a gray deposit, while deep shadows are represented by almost unchanged film. It will be noticed that the colors are reversed. The whites in nature are black on the plate and the blacks are white. This is the reason for calling the developed plate a negative.

15. *Fixation.* —When the development of an exposed plate is completed, the film consists partly of metallic silver and partly of unreduced silver bromide which is almost as sensitive to white light as it was before the developer was applied. Moreover, the film is opaque, so that it would be difficult to print from it even if it were safe to expose it to white light long enough to do so. Thus it is obvious that, in order to render the plate permanent, so that it may be exposed to white light, and to make it more nearly transparent, so that it may be used for printing, the unchanged silver bromide must be dissolved and removed from the film. Silver bromide is insoluble in water, and so this is accomplished by placing the plate in a chemical solution called a "fixing bath," which "clears" or "fixes" the image. The fixing bath reacts with the silver bromide and forms a transparent double salt which is soluble in water and can be readily washed out of the film. This leaves a reversed image or negative of black metallic silver imbedded in gelatine, representing by proportionate degrees of "density" or opacity the different intensities of light and shade in the view photographed.

Printing

16. *What is Printing?* — The negative is but the means to an end, as it is in every way the opposite of the view itself. Its name comes from the fact that it is reversed, not merely as regards light and shade, but from left to right and from top to bottom. Printing is reversing a negative, that is, making a positive from a negative. A positive represents in monochrome the objects as we see them, both as regards light and shade and position. Printing from a negative consists simply in placing behind it a sheet of paper coated with a light-sensitive emulsion, similar to that used on plates and films, which will darken on exposure to white light. It will be remembered that the high lights or lightest parts of the view as it appeared, are blackest on the negative; the shadows and darkest parts are almost clear glass, and the half-tones or medium lights are gray-black. In printing, the dense, black portions of the negative will allow but little light to pass through and affect the paper beneath them, and so these protected portions of the paper will remain white, or nearly so, producing the high lights of the print corresponding to those in the view itself. Portions of the view which are nearly transparent allow the light to pass through with almost full intensity and darken the paper beneath, producing the shadows of the picture. The amount of darkening is in proportion to the degrees of transparency of the negative, which were caused by the different intensities of light in the view itself. All intermediate shades, rendering the half-tones of the print, are reproduced in the same way and at the same time.

17. *Printing Processes.* — Printing papers may be divided into two separate and distinct classes, known as "printing-out" and "development" papers. The image becomes visible on printing-out papers very soon after exposure to the light, and is printed until it becomes as strong as or stronger than is desired in the finished print. After toning, fixing, and washing, such a print is permanent and ready to mount. Blue-print paper, plain silver, albumen, gelatine, and collodion papers belong to this first type. Silver chloride is the sensitive salt used in the emulsion of most of these papers, as it darkens more rapidly than silver bromide. The names gelatino-chloride and collodio-chloride are given, according as the silver salt is carried in gelatine or collodion. On development papers the image after exposure is very faint or not visible at all until after it has been treated with a developer. Bromide papers are coated with a gelatine emulsion of silver bromide very similar to that used on plates and films, except it is not so highly sensitive. Such papers require the development and fixation of an invisible image the same as a plate. The so-called "gaslight" papers are slow bromide papers, and are treated in the same way. Platinum is another development paper, but differs from bromide in that the image is slightly visible after printing, the shadows appearing a brownish orange tint. Development brings out the full image and changes the colors to blacks and grays, after which the print is fixed for permanence. Carbon printing is also a rather complex development process, and there are many others which need not be mentioned here.

Editorial Department

THE PROGRESS OF THE PAST YEAR

In accordance with our usual custom, we shall again devote a few lines to the advances of the year in the photographic field. In processes there is little to record. Color photography has made steady progress in the hands of several experimenters, but no new discoveries have been made, and a cheap, simple, and practical process is no nearer than a year ago. The usual number of new lenses and other pieces of apparatus have been placed upon the market, but nothing is startlingly original. Catatypy is still in the hands of the inventors, Drs. Ostwald and Gros, who are steadily improving it, and expect that within a short time it will displace all other forms of pictorial reproduction for commercial uses. In England, during the closing months of the year, there has been a popular furore over oil-printing, a new modification of the bichromate processes, claimed to produce prints more easily susceptible of control and modification than those of any process yet known.

In photographic politics far-reaching events have occurred. An international organization has been organized to include the best pictorialists of the whole world. This society will hold annual shows in various capitals, and New York will have the first of these next winter. In America the First American Salon has become an accomplished fact, and seems assured of continuance. The rules adopted seem to have won the confidence of American exhibitors, as is proved by the enormous number of entries. The PHOTO ERA has in times past objected to the methods and standards of the Photo Secession, because it believed that they were not sufficiently conducive to the advance of American pictorial photography. Now that a new organization has appeared with more democratic ideals and rules, the purpose of the PHOTO ERA is accomplished, and we shall henceforth endeavor to support whatever we find good in American photography, regardless of society affiliations. In England the separation of the Linked Ring from the R. P. S. engendered bitter feelings, but the result has proved highly beneficial to both sides by the stimulation of healthy competition, and the bitterness has long since disappeared. We trust that in America also, the forming of sides will induce each to do its best, and to learn to appreciate and understand the efforts of the other.

THE PHOTO ERA TOURS OF EUROPE

The sets of pictures submitted by the participants in the PHOTO ERA Trip Abroad in 1904 were judged on December 14 by a jury composed of Wilfred A. French, Rossiter Howard, and M. O. Sampson. These judges unanimously awarded the prize to Mr. F. H. McClure of Portland, Oregon, and a check was mailed him the same day. The jury agreed without division that Mr. McClure's pictures were the best submitted in all of the following respects: Choice of subjects, artistic treatment, composition, lighting, exposure and development, printing and mounting. A selection of pictures from the prize collection, which numbered 99 prints, will be published in the March PHOTO ERA.

The 1904 tour has now become a matter of history, and the PHOTO ERA is so impressed with the value of the European trip as an educational influence in photography, that we have decided to repeat what can no longer be regarded as an experiment. We shall offer not one trip, but a series of tours, giving the possibility of selecting a route which will appeal to almost any taste or financial limitation. The principal tour will follow nearly the same lines as that of last year, approved by long experience as one of the most popular travel routes. Landing at Antwerp, we shall see a little of Flanders, spend a week in Germany, make a tour of Switzerland, and traverse the Italian peninsula from Venice to Naples. This route will give us the oppor-

NINTH PRIZE
CLASS A

MORRIS WASSERMAN — PRESERVES

tunity to study the best art and find the most picturesque and photographic scenery, people, and architecture of Europe. We shall visit the Italian Lakes, Venice, Torcello, Chioggia, Ravenna, Bologna, Florence, Fiesole, Pisa, Assisi, Perugia, Orvieto, Cortona, Rome, Tivoli, Monte Cavo, Naples, Capri, Pompeii, Sorrento, and Amalfi, sailing from Naples for Gibraltar, the Azores, and New York on the return trip.

Those desiring to extend the trip will be advised to go on to Sicily and Greece in our special steamer. This trip will be much more interesting than last year, and will include almost every point of historical and archeological interest in Magna Graecia, from Sicily to Constantinople. Another option for extending the trip will be a return through Eastern and Southern Germany to Holland and London.

London may also be visited at the beginning of the trip, if desired, by sailing one week earlier, and various other changes may be made in the early portion of the trip. A detailed itinerary of the various routes offered will be published next month.

What do we offer in these trips, and to whom should they appeal? In the first place we are offering photographers the chance to take pictures in most picturesque localities, under the guidance of leaders who are both expert photographers and skilled critics of art. We also offer them the priceless opportunity of seeing a great part of the art treasures of the world under the guidance of men who have devoted their lives to art interpretation. These tours should also appeal to every man or woman who wishes to visit Europe either alone or with friends. We offer expert guidance to everything of legitimate human interest on our whole route. We take every care and expense of travel from your shoulders from the time you step upon the steamer until your return to America. No one could do more, and no other conductors do nearly as much. We invite communication from every reader who has any thought of visiting Europe this summer.

A WORD OF PROTEST

The New York Salon has closed its doors, and its promoters are basking in the sunlight of success, and intoxicating themselves with the sweet nectar of victory. While the Salon was undoubtedly successful, and the best exhibition of pure photography which has ever been formed in this or any other country, the PHOTO ERA wishes to place itself upon record as opposed in

W. H. ZERBE, JR.
BROWN OCTOBER
EIGHTH PRIZE, CLASS B

principle to the selection of a jury of painters alone to judge artistic photographs. The PHOTO ERA believes that the camera is a means of artistic expression through a plastic medium, and that only by holding to the utmost possibilities of this medium can photography reach her full stature as a handmaiden of the arts. Therefore the painters' limitation of accepted photographs practically to those showing no handwork is a limitation in principle which we cannot accept. The negative or the gum-bichromate film is a plastic medium partially prepared, and the photographer with the artistic ability has the right to express his artistic emotions as well as in him lies, through any alteration of the facts of nature thereon imprinted which seems to him advisable. Naturally, in doing this, he must be judged by his ability and the artistic truth of his results, but the right must not be denied to him who has the genius to accomplish.

A PLEA FOR FAIR PLAY

Judging from the violent opposition of some of our foreign exchanges to the system of measuring light-intensities, which Mr. Steadman is soon to give to the public, it is a misdemeanor for an American to introduce anything new in the practice of photography. The chief objectors seem to be manufacturers of exposure-meters, who imagine that, because their product has been the source of practical value to a large class of photographic workers, there is no room left for improvement in that direction. Can it be — perish the thought! — that our European friends dread the success of the Steadman system, lest it might endanger or even disturb a flourishing British industry? It would be ungenerous for us to suppose that there is a country desirous to arrogate to itself all the inventions and improvements yet to be made in the interests of photography. But harboring such a wish and accomplishing it are two decidedly different things. We imagine that there would be no objection on the part of numerous photographic writers if Mr. Steadman were to migrate to England and there develop

his idea advantageous to photography, in which case he would receive all possible encouragement from a delighted photographic fraternity. Perhaps he might then also become the recipient of a certain medal, so frequently bestowed by a (in England) well-known society.

Handel, Herschel, Kneller, Alma-Tadema, Herkomer — all continental celebrities — settled in fair Albion and, later on, thanks to their genius,were claimed as Englishmen. It has always seemed to us that it is the duty of every journal published in the interests of photography to further and encourage each honest effort, in any part of the world, to improve our existing forms of apparatus, accessories and working-methods, instead of strangling such an endeavor in its birth. Jealousy, spite, prejudice or trickery should be foreign to the nature of every broad-gauged, fair-minded journal devoted solely to the interests of its supporters.

IMPRESSIONS OF THE NEW YORK SALON

WILFRED A. FRENCH, A.M.

Many years have passed since we have had occasion to be really enthusiastic about matters photographic; but our admiration and exultation reached high-water mark, when we were privileged to inspect the First American Photographic Salon, which was held in the Clausen Art Galleries, New York City, December 5 to 17. It was a source of sincere gratification to realize that the vast undertaking, which had called for the combined activity of numerous American photographic societies and eminent workers on both sides of the Atlantic, and in the face of a long and persistent opposition, had culminated in an event of unusual importance in the photographic world. Our satisfaction at the success which has attended the tireless efforts of the organizers of the First American Photographic Salon, notably Mr. Curtis Bell of New York, is such that we can afford to ignore the various attempts of certain persons to render this enterprise impossible. The quarters selected for the exhibition were spacious, well-lighted and easily accessible. The dominant feature of the Salon, however, was the exhibits, selected by the jury for being primarily artistic and straight photography. Prints other than in black or warm brown tones were barred, as were also those that had been worked up or smacked in the least of clap-trap. It was the heyday of straight photography, a return to the primitive principles of the art. Pictures which had received the aid of the brush, however skilfully executed, were turned down by the jury, which, as is well known, comprised the leaders of American art. This must come as a severe shock to those pictorial workers, who have drifted away from the canons of photographic simplicity in the hope of developing a style of art that would eventually compete with painting. On the other hand, practitioners along original photographic lines, who have vainly knocked for admission at the door of previous exhibitions, have seen their efforts hung at the First American Photographic Salon. It was a surprise all around. The rejection by the jury of prints in strong monochrome, red and blue, for example, should be approved by all; for if a photograph cannot stand in a black or brown tone, with suitable gradations, it cannot gain legitimately by being transposed into color. No person in his right mind would hope to appreciate a beautiful landscape by viewing it through a piece of colored glass. In surveying this interesting exhibition we were impressed also by the highly artistic atmosphere, as well as by the vigorous, healthy tone, that prevailed. While there was evident much originality in *motifs*, there was a noticeable absence of those mawkish, aberrant, morbid impressions, reminiscent of the late, unlamented Mr. Beardsley. For this alone we owe much thanks. It is to be regretted, however, that portraiture was not more strongly represented, but, better the few masterly portraits of Allen Drew Cook than a liberal sprinkling of efforts less excellent. The foreign contributions are of an unusually high order of merit, notably the marines, while those of native workers, represented principally by genre and landscape studies, are, with few exceptions, an honor to American photographic art.

The Round Robin Guild

Conducted by Elizabeth Flint Wade. Specially designed for the Amateur Photographer and the Beginner. Membership may be obtained by sending name and address to the PHOTO ERA.

"If I could find the Little Year,
The Happy Year, the Glad New Year,
If I could find him setting forth
To seek the ancient track,
I'd bring him here, the Little Year,
Like a peddler with his pack.

"And all of golden brightness,
And nothing dull or black,
And all that heart could fancy,
And all that life could lack,
Should be your share of the Peddler's ware,
When he undid his pack."

This is what I would do for the members of the Round Robin Guild were it not for the "If!" which makes so many of our desires impossible. But it does not prevent me wishing each and every one a Happy New Year, and wishing also that it may be a happier Year than all that have gone before.

No one is better authority on Yule-tide joys and New Year's pleasures than Dickens, and Dickens says that "New Year's Day is the best and happiest in the whole year, and one that is almost sure to bring good fortune with it."

"Here's hoping" that it brings good fortune to us all, and we bid the New Year welcome, thrice welcome, — for does not its advent create anew in us, —

"The hope of seeing what we have not seen,
The hope of winning what we have not won,
The hope of being what we have not been,
The hope of doing what we have not done"?

LANTERN SLIDES BY REDUCTION

THE amateur who has an interesting collection of lantern slides and a small magic lantern has material for many a pleasant evening. If in addition to showing the slides, and simply mentioning the titles of the pictures, he arranges a short talk interspersed with anecdotes connected either with the making the picture or the picture itself, he can furnish a unique evening entertainment.

Lantern slides are easily and quickly made by contact printing, and directions for making them were given in the December number of the PHOTO ERA. While in many respects contact printing is the most satisfactory way of making slides, yet when one has a large negative from which a slide is desired, he must resort to the process of reduction. This process is more work, still it is not so much of a task as one imagines, or as one would believe from reading some of the directions for making slides with the camera.

In the Round Robin Guild Department for April, 1904, will be found a description of a special camera for making lantern slides by reduction. The lens is a fixed focus, and the negative is inserted in one end of the camera, the slide at the other, and the exposure made. This camera is listed at $5.00, and while it is one of the most convenient of instruments, in that it simplifies the work to such a degree that it is almost as easy to make a slide by reduction as by contact, still one need not have this special camera in order to make good slides. One can make his own "dark box," which is simply a wooden box a foot and one half in length, and 8 x 10 in size, and open at both ends. In one of the ends a frame is fitted into which may be slipped kits for the different-sized negatives, which make it possible to place the negative in the frame exactly in the center of the opening.

This box is attached to one end of a board three or four feet in length, the camera is set on the other end of the board so that the lens comes within the open end of the box. If the size of the negative or the angle of the lens make it necessary for the lens to be set outside the box, then a rubber focusing cloth is thrown over the whole, so that no light enters the lens save through the negative.

In order to get a clear, sharp slide, the light entering the negative must be unobstructed, so an upper room is chosen for the work, a table placed near a window, and the board holding camera and box tilted at such an angle as will bring the sky for a background. To hold the camera in place when focused, a pair of wooden thumb-screws are used, either screwed on the board directly back of the camera or they may clamp the frame of the camera to the board.

As a guide to centering the slide, a lantern-slide mat is pasted on the ground glass so that the center of the opening comes in the center of the ground glass. The lens should be so arranged that it points directly to the center of the negative. A small piece of board may be placed under the camera to bring the lens to the proper position, in case it does not coincide with the center of the negative.

Focus sharply with a large diaphragm, then put in a small diaphragm for the exposure. Close the shutter, put in the lantern plate, open the shutter, and make the exposure, which varies from ten to thirty seconds according to the density of the negative.

Mary H. Mullen Child Study, Second Prize

Of course a fine negative makes a fine lantern slide, but sometimes a thin negative makes an excellent slide.

In placing the negative in the frame for making the slide, if it is put in upside down, the image will be upright when viewed in the camera, and this assists materially in securing a good focus. The film side of the negative is placed toward the lens, and the glass side should be cleaned and polished to insure a clear image.

In beginning the making of slides by reduction use only such negatives as will give a fine image. When one has become somewhat expert, then one may experiment with negatives of inferior quality; but if the first trials are made on poor negatives, the amateur is quite apt to be discouraged, — if not disgusted, — with the making of slides by reduction, and abandon the work altogether.

A developer which gives admirable result, but which requires full exposure and rather slow development, is one in which hydroquinone alone is used for the developing agent.

Mix in the order given the following chemicals: — Water, 20 oz.; hydroquinone, ¼ oz.; sulphite of soda, ½ oz.; bromide of potassium, 20 grains; citric acid, 10 grains.

In mixing solutions for lantern slides the water used should be filtered through two thicknesses of filtering paper. It is also a wise precaution to filter the developer after it is mixed to avoid pinholes in the slide by bits of dust or specks settling in the film. After the negative is developed and fixed, if it does not appear clear and sharp, lay it for a moment or two in a weak solution of ferricyanide of potassium, rinse it, and return it to the hypo bath for the purpose of removing any trace of the ferricyanide, then wash and dry.

SILHOUETTES

SILHOUETTES are always interesting, and may be used in many ways for decorative work. It requires no special apparatus for the making, and the arrangement for the sitting requires only a few minutes' work. The room should be on the second or third floor, so as to command a clear view of the sky. All but one of the windows in the room are darkened, and over this window must be stretched a piece of very thin muslin. The camera is placed exactly opposite the window, with the lens pointing toward the center. A sort of tunnel must be constructed, leading from the camera to the window, and this is easily done by running two stout cords from the top of the window to the opposite side of the room, and hanging over these cords blankets or shawls to exclude the light. The sitter takes his position in a chair placed sideways to the window, and turns the head so that an exact profile shows against the window. The camera is now focused until the outlines are very sharp, and the exposure — varying from one to five seconds, according to the intensity of the light — is made. The subject should be dressed in black or dark clothing, and one should look well to the arrangement of the neck adornment, so that no excrescences appear in the silhouette. The simpler the dressing, the more pleasing will be the outlines of the picture.

Carry the development far enough to give a

Jeanne Jandrier Honorable Mention

very dense background, that will print white. If not dense enough for that, paint over with Gihon's Opaque or with lampblack in moist water-color. Print very deeply, so that the figure will be perfectly black with no detail. Wash; and instead of toning, fix in hypo solution made up in the proportion of 1 oz. of hypo to 10 oz. of water.

A very attractive way to mount these prints is to affix them to glass by optical contact, and back them with black photograph paper,— usually called needle paper,— leaving a margin of paper wide enough to turn over and fold down over the edge of the glass, making at the same time a binding and a border. If the print is just the size of the glass, put the glass over the print and bind with lantern-slide strips or with the black passe-partout binding.

To mount by "optical contact," soak the print for five minutes in a solution made of ¼ oz. of glycerine and 8 oz. of water. Have the glass perfectly clean, and polish it with French chalk. Lay the print face down on the glass, and with a rubber squeegee rub the print down carefully until all air has been expelled from between the glass and the print. If the first attempt should not be successful, peel the print off the glass and repeat the process.

The size of the silhouette should be rather small, after the manner of the old-time silhouettes which used to be cut from black paper and pasted on a white background.

ANSWERS TO CORRESPONDENTS

F. D. S.—In order to make correct stereoscopic photographs it will be necessary for you to have a camera fitted with matched lenses. The lenses are usually mounted three and one half inches apart, and the exposures made simultaneously. The images are transposed when they are mounted.

Ben. L.—If discolorations appear on your velox and bromide prints after fixing, they may be removed by placing the prints for a few moments in a solution made of sulphuric acid, ½ oz.; chrome alum, 1 oz.; water, 10 oz. Remember that sulphuric acid is very poisonous, and the greatest care must be taken in handling not to get any of the undiluted acid on the skin, as it will cause a painful burn.

David W.—Amidol is an excellent developing agent, and acts much more rapidly than pyro. The image comes up very quickly, gains density rapidly, and has fine gradation of tones. The negatives are usually crisp and clear. A good formula is amidol, 20 grains; sulphite of soda crystals, 90 grains; water, 10 oz. If a plate is known to be overexposed, add a few drops of a ten per cent solution of bromide of potassium to the developer before immersing the plate in it. Amidol stains, so it is wise to use finger tips when developing.

Emma L. Williams Honorable Mention

JAY F. H.—Prints should tone in a combined bath in from five to ten minutes. The smaller the diaphragm used, the sharper the picture; but the exposure must be prolonged according to the size of the stop used. The rule is to double the time of exposure for each smaller diaphragm inserted. If with an f. 11 stop, an exposure of one second is required, then with an f. 16 — the next size smaller — an exposure of two seconds must be given.

F. R. EATON.—A simple vignetter may be made by taking an empty plate-box cover which is large enough to cover the printing frame, tearing a hole in the cover, pasting a piece of tissue paper over the opening, and placing it over the printing frame during the printing. Any size or shaped opening may be made, according to the negative from which the print is to be made.

ARTHUR SHELDON.—A "flat" picture is one that shows no contrast, and is due either to overexposure and underdevelopment, to underexposure, or to false lighting.

W. A. HUBBARD.—When making interior views in which no figures are included, focus with a large stop, then use a small stop to make the exposure. For portraits use a medium-sized stop, and do not focus so sharply that every line in the face shows as if under a microscope. Focus sharply, then turn the lens a trifle from the plate, not enough to blur, but enough to soften the outlines and give roundness to the features.

C. W. P.—A solution of bromine will remove the traces of hypo from a gelatine film. Make a solution of bromine, 1 part bromine to 30 parts of water, and immerse the film in it for a few minutes. Wash and dry.

HARRIET K.—Clean your developing trays with a solution of muriatic acid, 1 ounce to 15 of water. Tie a rag to a stick, dip it in the acid and scrub the trays with it. After using the acid, wash the trays in good soap-suds, rinse, and dry. Be careful not to get any of the acid on the hands, as it burns very severely. If one is so unfortunate as to burn himself with acid, put sweet oil and lime-water on the burn as soon as possible. If sweet oil is not handy, use grease of some kind to prevent further burning, as the acid burns in if not checked with the grease. Water will not stop the further burning of the acid.

ADA S. T.—If the films are soaked for a few minutes in tepid water, they will straighten and lie flat in the developer. If you use plenty of developer, it is not necessary to hold the films down in order to keep them wholly submerged in the solution. The next time you purchase films, ask for non-curling films. These are coated on both sides and lie perfectly flat, like a plate, when placed in the developer. In drying them it is not necessary to put them in the glycerine solution, but do not pin them flat against a board. Pin them to the edge of shelf, so that neither side will hit anything. They dry flat.

ROUND ROBIN GUILD PHOTOGRAPHIC COMPETITION

SUBJECT for the January Competition, "Interiors." Closes February 28.

First prize: A yearly subscription to *Art in Photography*, value $10.00.

Second prize: Five dollars in photographic books or magazines, published or advertised by us, to be chosen by the winner.

Third prize: The choice of a yearly subscription to the PHOTO ERA or the *Practical Photographer*.

Fourth prize: One number of *Art in Photography*, value $2.00.

AWARDS

OWING to the necessity of going to press with this number much earlier than formerly, it was impossible to make cuts from the pictures awarded prizes in the "Harvest Scenes" competition for insertion in this number. The announcement of awards is therefore postponed until next month.

We publish this month three pictures from the "Child Study" competition, which was the most successful both in quantity and quality of work submitted of all that we have yet held. We trust that the pictures submitted in the next two competitions, "Interiors" and "Snow Scenes," may be many and good.

SUBJECTS FOR COMPETITIONS

December.—"Portrait Study." Closes January 31.

January.—"Interiors." Closes February 28.

February.—"Snow Scenes." Closes March 31.

March.—"Still Life." Closes April 30.

April.—"Cloud Study." Closes May 31.

May.—"Animal Study." Closes June 30.

June.—"A Country Road." Closes July 31.

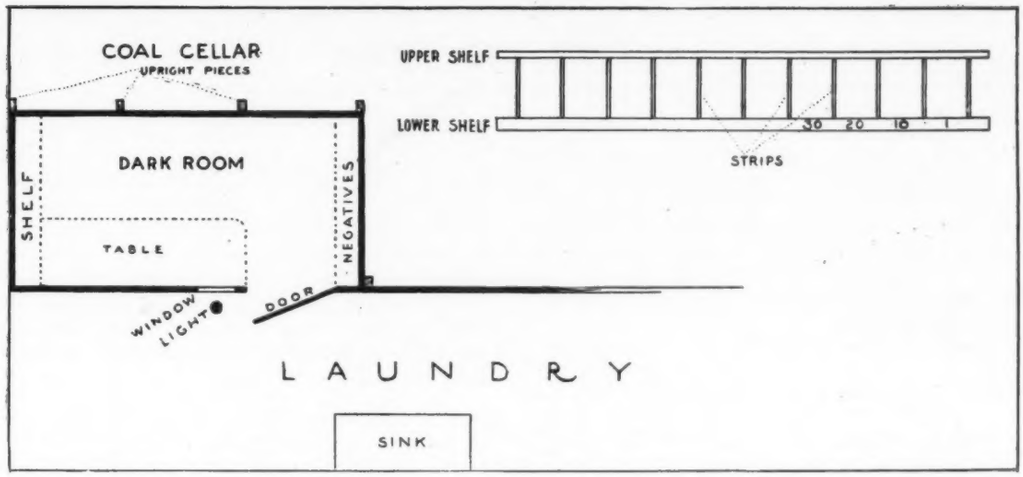
Special Competition.—"Old Acquaintances." From five to ten character studies, preferably illustrating the inhabitants of "Our Village," mounted on a folder which closes like a book. Closes March 31, 1905. Prizes $10 and $5, awarded only to satisfactory collections.

HINTS INTERCHANGE

AN INEXPENSIVE DARK ROOM

William Spanton

A dark room is like a telephone in a house, — not indispensable, but very convenient. I did without one for three years, using the bathroom, but the carrying of chemicals and utensils back and forth consumed considerable time. A year ago I decided to make a dark room in the cellar. The location, of course, will be determined in every case by the arrangement of the cellar. Mine is divided into four parts, separated from each other by wooden partitions. The laundry and coal cellar are side by side. I cut a door



in the partition between the two and built the dark room in the corner of the coal cellar, thus having to build up only two sides. From the grocery I secured the boxes necessary, "Force" boxes being the best, as the lumber is nice and smooth and of a good length. From a neighbor, who was making some alterations in his house, four pieces 2 x 4, and long enough to reach to the ceiling, were secured. The floor and side pieces were put in shape, then the floor put down and the siding nailed on. The boxes were used for the siding, but the floor was made of heavier stuff; ¾ in. lumber should be used. I spaced the 2 x 4's so as to accommodate the boards with as little waste as possible. The boards were nailed on so that the upright pieces came outside the dark room, thus making the inside smooth. The inside dimensions of mine are 2 ft. 9 in. wide, 6 ft. long, and 7 ft. high.

The boards were fitted as closely together as possible, and then on the outside strips of paper were pasted over the cracks. The boards, however, dried out considerably in three months, opening the cracks and splitting the paper strips. I then got some heavy wrapping-paper and papered the room on the inside. A wooden elbow 4 in. square was fastened to one side as a ventilator. The door was made as near to one end of the room as possible; 8 in. from the door and 34 in. above the floor a hole was cut in the partition to take a 5 x 7 ruby glass.

This was fitted in a frame sliding in a groove, so that it can be opened and closed. Light is furnished by a Welsbach burner placed on the outside. Where there is neither gas nor electric light, a lamp with a reflector could easily be placed by the window. Beneath the ruby window a shelf 14 x 32 was placed, to hold trays during developing. At first I thought of having running water in the room, but as that would have entailed quite an expense for piping, and as the sink with faucet in the laundry is only 12 ft. away, I did not put it in. It is an easy matter to carry plates or prints from the fixing bath to the washing tray in the sink, and the danger of any slopping in the dark room is obviated. A shelf above the table and two others at one end provide ample space for bottles, etc. At the other end, nearest the door, there is a rack for trays and an arrangement for storing negatives. Two shelves 7½ in. wide were placed 5¾ in. apart. The lower shelf should be at least 1 in. thick, for glass plates are heavy. Strips ⅜ in. wide were nailed 1⅛ in. apart to the front edges of the shelves. This leaves a space between the strips sufficient for ten negatives in their envelopes. The spaces are numbered 1, 10, 20, 30, etc., as in cut. My negatives are numbered and indexed in a book. To find a given negative, all that is necessary is to ascertain its number. If it is 35, it would be the fifth one in the 30 compartment. My one shelf will hold 200 negatives. A bench 10 x 24 x 20 in. high does for a seat when developing, or a place to put paper and printing frame when printing. Strips are nailed on the door casing for the door to shut against, so as to exclude all light. A common hook fastens the door on the inside, and a wooden button on the outside.

All I had to buy were the hinges for the door, ruby glass, Welsbach light and pipe necessary to bring the gas over to the window, — a total cost of not over one dollar. For others the cost might be more or less, according to the lumber which would have to be purchased, fixtures for light, etc. There has been a marked improvement in the sweetness of my wife since I quit using the bathroom. I still use the bathtub, however, for drying my prints. After washing I stick them on the sides of the tub, face up, of course. As fast as they dry they drop down, and in the morning you have a "bathtub full of pictures," as my little girl says.

Notes and News

THE Belgian Photographic Association proposes to hold a salon and congress of photography during the months of July and August, 1905. These will take place during the celebration of the seventy-fifth anniversary of the independence of the kingdom of Belgium. Any desired information may be had by addressing the Secretary General, Mr. M. Vanderkindere, Palais du Midi, Brussels, Belgium.

THE CATHEDRALS OF SOUTHERN FRANCE. By Francis Miltoun. With ninety illustrations, plans, and diagrams by Blanche McManus. Boston, 1905. L. C. Page & Co.

This is a worthy sequel to "Cathedrals of Northern France" by the same author (reviewed in the issue of January, 1904, of the PHOTO ERA), and equally attractive in subject-matter. The volume is intended as a contribution to travel-literature, and forms a desirable companion to the regulation guide-book, especially if the tourist be a lover of churches. The author takes his willing reader to a grateful southern clime, where the conditions for admiring noble church architecture are more novel and enchanting than in cities of northern or mid-France. We do not, of course, find here the Gothic style as abundantly represented as in the north of France, but instead the more picturesque Renaissance, the Romanesque, which partake of the character of the soil and the people of this section of Europe. To the art student we would say that in France the nation's first art expression was made through church building and decoration. The book is artistic in typography and binding, while the original illustrations by Blanche McManus interpret the spirit of the architecture, *ensemble* or detail, in a most effective manner.

A COMPLETE list of the winners of the medal of the Royal Photographic Society, "the blue ribbon of photography," has recently been published by the *Photographic News*. The most consistent winner was the late H. P. Robinson, who from 1877 to 1887 secured the honor eight times. After he ceased to exhibit in his own name, his son, R. W. Robinson, secured the medal four times before 1894, after which year both names disappeared from the list. In the early years we do not find any names which we recognize as American, but of late years the following Americans have won the medal: 1894, Rudolf Eickemeyer, Jr.; 1895, 1896, and 1899, Alfred Stieglitz; 1898, Mathilde Weil; 1902, Frank R. Fraprie and Frederick E. Ives; 1903, Carl E. Semon; 1904, Henry H. Pierce.

PHOTOGRAPHIC EXHIBITIONS AND COMPETITIONS

SOCIETY OR TITLE	DATE	ENTRIES CLOSE	INQUIRE OF
Boston Camera Club	Jan. 12–14, 1905	.....	H. M. Hames, 65 West St., Boston, England.
Scottish National Salon	Jan. 14–28	Dec. 31	W. A. Frame, 28 Bank St., Hillhead, Glasgow, Scot.
Third International Salon, Marseilles	Jan. 28–Feb. 12	Dec. 31	M. E. Astier, 11 rue de la Grande Armee, Marseilles, France.
Blairgowrie Photographic Society	Feb. 6–11	Jan. 7	W. D. M. Falconer, James St., Cottage Blairgowrie, Scotland.
Vienna Camera Club	Feb. 15–Mar. 15	Dec. 31	F. Matthies-Masuren, Halle, a. S.
Brooklyn Camera Club	Feb. 16–18	Feb. 4	C. M. Shipman, 776 Manhattan Ave., Brooklyn, N.Y.
Amateur P. A. of Victoria, Melbourne	Feb. 20–25	Jan. 30	F. W. Miscamble, F. I. A. V., 349 Collins St., Melbourne, Victoria.
Photographic Society of Ireland	April	.....	R. Benson, 3 Orwell Park, Rathgar, Dublin, Ireland.
Northern Photographic Exhibition	June	.....	F. G. Issot, 62 Compton Rd., Harehills, Leeds, Eng.
Salon and Congress of Photography, Brussels	July–Aug.	.....	M. Vanderkindere, Palais du Midi, Brussels, Belg.

GIVER	CLOSES	PRIZES
Burr McIntosh Monthly, New York (Outdoor Photographs)	Monthly	$15, $10, $5.
Burr McIntosh Monthly, New York (Freak Pictures)	Monthly	$10, $5.
Photogram, Arundel St., Strand, London	Monthly	One guinea and half guinea
The American Boy, Detroit	Monthly	$2, $1.
National Sportsman, Boston	Monthly	$5, $3, $1, $1.
Browning's Magazine, Boston	Monthly	$5, $3, $2.
The Book-Lover, New York	Monthly	$5, $3, $2, $1.
American Amateur Photographer	Monthly	$5.
Western Camera Notes, Minneapolis	Monthly	$5, $3, $2 in goods
Field and Stream (Sporting and Outdoor Pictures)	Monthly	$5, $3, $2, $1.
Leslie's Weekly, New York	Weekly	$10, $5, $1.
Buffalo Express	Weekly	$5 to $25.
New York Evening Mail	Weekly	$5.
Commercial Advertiser, New York	Weekly	$3, $3, $2, $1.
St. Louis Star	Weekly	$5.
Seattle Post Intelligencer (Western Scenes)	Weekly	$2.50, $1.50.